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Report on Rail and Marine Interface in the San Francisco Bay Area



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U.S. DEPARTMENT OF COMMERCE

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INTRODUCTION

An important link in the efficiency and economy of intermodal transportation is the interface between rail, truck and ocean modes as it takes place in the transfer of containers between rail and ocean terminals in port cities. This report examines in detail the factors influencing the transfer of intermodal equipment between rail terminals and U. S. flag carrier marine terminals in the San Francisco Bay Area. The objective is to provide an informational survey and analysis of the nature, procedures and problems of container interchange.

The Office of Ports and Intermodal Systems of the Maritime Administration, Western Region, welcomes comments and inquiries regarding this report.

II. SAN FRANCISCO BAY AREA



RAILROAD TOFC/COFC TERMINALS

There are three line haul rail carriers serving the ports of the San Francisco Bay Area: The Atchison, Topeka and Santa Fe Railway Co. (Santa Fe), the Southern Pacific Transportation Company (SP), and the Western Pacific Railroad Company (WP).

Each carrier maintains a TOFC/COFC (trailer on flat car/container on flat car) terminal in the East Bay area. SP operates an additional TOFC/COFC terminal across the Bay in San Francisco.

All of the railroad intermodal terminals handle domestic piggyback trailers and marine containers. The railroads are experiencing growth in both types of piggyback movements. The TOFC/COFC terminals are undergoing expansions and improvements to maintain reliable service at a higher volume.

Marine containers make up an average of 40 percent of the TOFC/COFC traffic in the San Francisco Bay Area. The volume of marine containers being shipped by rail is increasing due to the recent introduction and rapid expansion of mini-landbridge services, the continued growth of containerized shipping, and the general increase of import/export trade.

The following are brief inventories of the facilities and services available at the railroad TOFC/COFC terminals. The marine terminal operations will be described later in this report along with a discussion of the primary railroad piggyback plans used for marine container shipments.

Atchison, Topeka and Santa Fe Terminal

Location - Canal Boulevard near the Port of Richmond in Richmond, California.

Highway Access - One-half mile from State Highway 17 which connects with Interstate 80 to Oakland and San Francisco.

Car Capacity - Two tracks each with a 114-car capacity. One track with an 11-car capacity.

Trailer/Container Yard - Paved yard with parking spaces for 350 to 400 units.

Handling Equipment - Two overhead cranes, each with a 40-ton capacity, capable of completing a loading or unloading cycle in an average of 2½ minutes. One 28-ton "Hyster" fork lift; 75 container chassis.

Additional Facilities - Gatehouse, truck scales, TOFC/COFC office building, and a new maintenance and repair center for containers and trailers.

Expansion Plans - Three acres of additional parking area for containers will be paved.

Volume - Daily average of 207 TOFC/COFC units. This is a 37 percent increase over the average in 1972. Forty percent of the total volume is marine containers.

TOFC/COFC Train Schedule - One train departs daily for Chicago and connects in Bakersfield with a train for Kansas City and a train for East Texas and the Southwest. A second daily train is scheduled for San Diego. Santa Fe offers daily "Run-Through Service" from Richmond, Ca. to Richmond, Va. Four trains arrive daily, two from Chicago, one from Texas and the Southwest, and one from Kansas City.

Unit Train - Santa Fe operates a landbridge unit train carrying marine containers between the East and West Coasts. Trains made up of 60 cars are released once a week in each direction between Richmond, Ca. and Port Elizabeth, N. J.

Receiving Time - Both trailers and containers may be tendered for loading up to five hours before train departure.

Southern Pacific-Oakland Terminal

Location - 1500 Middle Harbor Road between the Port of Oakland's Seventh Street Terminal and the Middle Harbor area.

Highway Access - One mile to State Highway 17, two miles to the interchange of Interstate 80 and 580.

Car Capacity - Four tracks totalling 140 car spots.

Trailer/Container Yard - Parking spaces for 300 units.

Handling Equipment - Three piggypackers, two of which have a 45-ton capacity, can complete a loading/unloading cycle in an average of two minutes. Yard tractors are used to position the units. New gantry crane with a 40-ton capacity is also in operation.

Additional Facilities - A TOFC/COFC terminal gatehouse. Pacific Motor Trucking Company (PMT), a Southern Pacific subsidiary, operates a CFS (container freight station) and an equipment maintenance and repair center adjacent to the TOFC/COFC terminal.

Expansion Plans - SP is in the process of adding additional trackage and 460,000 square feet of paving.

Volume - Daily average of 310 TOFC/COFC units. Marine containers account for slightly less than 40 percent of the total volume.

TOFC/COFC Train Schedule - Three trains depart the Oakland yard each evening. One train destined for Los Angeles connects to eastern points. The second is to Portland and connects with the MILW, UP, and BN. The third is a through train to Ogden and makes connections to eastern points arriving in Chicago on the fourth day.

There are six train arrivals daily. Two trains from Los Angeles carry traffic from the Southwest and from Memphis. Traffic from the Pacific Northwest arrives on one train from Portland. Three through trains arrive daily from Ogden and eastern points.

Receiving Time - Trailers are received up to one hour before train departure and containers by 5:00 p.m.

Southern Pacific-San Francisco Terminal

Location - Channel Street near the Port of San Francisco's Mission Rock Marine Terminal.

Highway Access - Less than one mile from Interstate 80 and 280 and two miles from U. S. Highway 101.

Facilities - Primarily TOFC movements are handled. A TOFC ramp is served by four tracks with 36 car spots. An overhead crane is also available to handle containers of 20 to 40 feet in length.

Volume and Train Schedules - Average daily volume of 50 TOFC units and five to eight COFC units. Trains in and out of the San Francisco Terminal connect in San Jose for movement south and in Oakland for the north and east. A major portion of TOFC traffic out of San Francisco is handled on wheels to the SP Oakland Terminal, a distance of eight miles by PMT where it is loaded for rail movement.

Plans - Installation of an overhead crane capable of handling both TOFC and COFC units.

Western Pacific Terminal

Location - 1700 Ferro Street adjacent to the United States Lines terminal at the Port of Oakland.

Highway Access - Approximately one mile to State Highway 17, two miles to the interchange of Interstate 80 and 580.

Car Capacity - Nine tracks with 135 car spots.

Trailer/Container Yard - Eight acre parking area has space for 300 units.

Handling Equipment - a 45-ton capacity sideporter and a new 40-ton capacity piggypacker. Thirty-five chassis are available from Western Pacific Transport, a subsidiary of Western Pacific Railroad.

Additional Facilities - A terminal gatehouse, office building, and truck scale.

Expansion Plans - A new terminal office building is near completion; expansion and paving of the yard area is also planned.

Volume - Average daily volume of 140 units of which 38 percent are marine containers.

TOFC/COFC Train Schedule - One through train departs Oakland each evening for Salt Lake City and connects with the D&RGW to Denver and eastern points. One through train arrives daily carrying traffic from these same eastern points.

Receiving Time - Trailers are received up to 10:00 p.m., containers up to 7:00 p.m.

MARINE TERMINALS

San Francisco Bay is one of the finest and most beautiful natural harbors in the world. Almost completely landlocked, the Bay connects with the Pacific Ocean through a narrow stretch of deep water, the Golden Gate.

The two major commercial ports in the San Francisco Bay serving U. S. flag carriers are the Ports of San Francisco and Oakland. These ports are transportation and distribution centers for Northern California and a large hinterland that extends to the Midwest and beyond to the Eastern Seaboard.

Seven U. S. flag carriers serve the San Francisco Bay Area, all offering regular container services. Four of these carriers have terminals in the Port of San Francisco and three are located in the Port of Oakland.

Following are brief descriptions of each U. S. flag carrier marine terminal operating in the San Francisco Bay Area.

American President Lines, Ltd.

American President Lines, Ltd. (APL) is located at the Army Street terminal, Pier 80, Port of San Francisco. Located at the foot of Army Street, this terminal is less than one mile from Interstate Highway 280 and 80 as well as U. S. Highway 101.

The 68.5 acre terminal is used by APL and States Line. There are nine berths at this pier with a MLLW (mean lower low water) depth alongside of 40 feet. Container handling is performed by a 30-ton capacity container crane serving the south side berths. Both APL and States have joint use of the crane, but they have separate facilities for all other operations.

APL is assigned three of the four covered transit sheds. It operates a 30,000 square foot container freight station, a terminal office, and a maintenance shop. The approximate storage capacity of APL's container yard is 2,000 units stacked and 750 on chassis (20-foot equivalents) with 350 reefer plugs available.

An average of 200 inbound and outbound containers are handled daily in and out of the terminal. All but five percent of the incoming containers are received and delivered by truck. Four truck lanes into the terminal and three out keep the flow of containers moving. Two Western Pacific Railroad tracks run onto the terminal but are used infrequently for container movements.

APL is planning to move its operations to a new 100-acre container terminal at Pier 94. Scheduled for completion in 1975, this four-berth terminal will be the newest addition to the Port of San Francisco's expansion and development program.

APL recently implemented a plan to temporarily move its operations from Pier 80 to Pier 96, the new LASH terminal which it will use jointly with the Pacific Far East Line (PFEL). The move, which was completed in June 1974, provides APL with facilities better able to handle its containerships until Pier 94 is completed.

APL maintains regular trans-Pacific freight service from San Francisco to ports in the Far East, Indonesia, Singapore, Malaysia, Ceylon, Pakistan, and India. There are trans-Pacific sailings from San Francisco every seven days. In addition, San Francisco is a port of call on APL's Atlantic Straits Service between the East Coast and the Orient. Mini-bridge service is provided to the Gulf Coast by a combined rail-marine service from all Far East areas except Ceylon, India, Pakistan, and Indonesia.

States Steamship Company

States Line is located at the Army Street terminal, Pier 80, Port of San Francisco, and has the same access to truck and rail transportation as previously described for the APL terminal.

The facilities operated by States Line include a container freight station of 35,000 square feet located in Transit Shed A, miscellaneous cargo handling equipment, a terminal office building, and a maintenance shop. The approximate storage capacity of the container yard is 530 units stacked and 100 mounted on chassis with 84 outlets available for reefer units.

The terminal gate has two truck lanes and all containers are moved to and from this terminal by truck. The average weekly volume of containers handled is 50 to 60 inbound and 100 to 120 outbound. The deadline for receiving containers before ship departure is two days for dry containers and one day for reefer containers.

States Line has signed a five-year lease, with a five-year option, with the Port of San Francisco to take over a portion of Pier 80 when APL moves to the new Pier 94 container terminal. Improvements at Pier 80, initiated by the Port of San Francisco, will then serve States Line's new Ro-Ro vessels which will be operating by the middle of 1975.

States Line maintains regular service between Pacific Coast ports and the Far East. States Line vessels call at the major ports of Japan as well as Okinawa, Kaohsiung, Keelung, Saigon, Bangkok, Pusan, and Inchon. There are an average of five scheduled sailings a month from San Francisco with direct sailings to Yokohama, Manila, and Hong Kong. Also cargo will be received or accepted for discharge at other San Francisco Bay Area ports including Alameda, Oakland, and Richmond. The versatility of service offered by States Line is exhibited by its ability to handle breakbulk, unitized, and shrink-packed as well as containerized cargo.

Pacific Far East Line, Inc.

PFEL's LASH terminal is located on Cargo Way, east of Third Street at Pier 96, in the southern waterfront area of the Port of San Francisco. Highway access from the terminal is via Third and Army Streets to Interstate Highway 280 and 80 and U. S. Highway 101.

This is the home terminal for PFEL's LASH fleet and is operated for the exclusive use of PFEL. The terminal was put into service in 1972 and is part of the Port of San Francisco's expansion and development program.

The total terminal area is 50 acres including an 11-acre lighter basin. Two LASH vessels can be berthed alongside the 1,740 foot prestressed concrete wharves with a MLLW depth of 38 feet. Two 30-ton container cranes operate along the berths. The lighter berthing area is 1,400 feet in length of which 850 feet is covered by a 75-foot cantilevered canopy extending from the lighter freight station. Suspended from trolleys attached to the canopy are five 5-ton stacker cranes with telescoping masts to handle the loading and unloading of lighter barges. In addition, a 50-ton rail-mounted bridge crane operates at one end of the lighter basin. It is used for lighter barge maintenance and for handling extra heavy units of lighter barge shipments.

Straddle carriers move containers within the terminal. The container yard has an approximate storage capacity of 2,000 20-foot units stacked and 750 mounted on chassis. There are also 350 reefer plugs in the yard. Additional facilities at the LASH terminal include: a lighter freight station with 180,000 square feet of covered cargo area, a container freight station which has bays for accommodating up to 54 containers at one time, a lighter maintenance and repair building, an administration building, a gatehouse, and a 60-foot high control tower.

The average daily volume of containers moving through this terminal is 100 inbound and 100 outbound. The gatehouse has four lanes in and three out. Container delivery and receiving is controlled at the gatehouse by a pneumatic tube system for fast handling of the documentation and color-coded truck papers which match colored pavement strips in the yard. There are two spur tracks running into the terminal and alongside the CFS. They are used primarily for other than containerized freight. Virtually all containers are received and delivered by truck.

From its home port of San Francisco, PFEL operates vessels to the Orient, Far East, Guam, and the South Pacific. Each of the six LASH vessels has a capacity of 56 lighter barges and 500 20-foot equivalent containers. PFEL also operates the passenger ships MONTEREY and MARIPOSA out of the Port of San Francisco's passenger terminal, Pier 35. These two ships serve the

South Pacific, Australia, and New Zealand, and offer express freight service. PFEL has established mini-bridge service with combined ocean-rail movements between Japan, Korea, Hong Kong, Taiwan, the Philippines, South Vietnam, and 33 Atlantic and Gulf Coast ports.

Prudential-Grace Lines, Inc.

The Prudential-Grace terminal is located at Pier 32 at the foot of Brannan Street on the Embarcadero waterfront of San Francisco. The terminal is less than one-half mile from Interstate Highway 80 and the San Francisco-Oakland Bay Bridge.

Prudential-Grace Lines is assigned to the berth on Pier 32 which is 845 feet long and has a MLLW depth of 35 feet. An open cargo area of 95,000 square feet between Piers 30 and 32 is used by Prudential-Grace for its container operations. Container loading and unloading is done by shipboard cranes. Containers are moved by straddle carriers within the terminal. Container chassis and tractors are available for moving units outside of the terminal. There is a transit shed at the terminal with 169,000 square feet of floor area for general cargo.

The volume of containers handled by Prudential-Grace is approximately 55 per week both import and export. Virtually all the containers moving through this terminal have a local origin or destination and thus are not moved by rail. Motor carriers perform pick up and delivery of all containers.

Prudential-Grace is the only U. S. flag carrier on the West Coast regularly serving all of South America, Central America, and Mexico. Its five vessels, including three "Santa" class passenger ships, can carry containers as well as general, unitized, bulk and refrigerated cargo. From San Francisco, Prudential-Grace makes regular calls to Acapulco, Balboa, Cartagena, Curacao, La Guaira, Rio de Janeiro, Santos, Paranagua, Buenos Aires, Valparaiso, and Callao as well as other Latin American ports.

Matson Navigation Company

The Matson terminal is located at the Port of Oakland's Seventh Street terminal complex. It is two miles from State Highway 17 via Seventh Street and two miles from Interstate 80 and the approach to the San Francisco-Oakland Bay Bridge.

This terminal is operated by Matson Terminals, Inc., for use by Matson and four other carriers. The terminal contains 46 acres and has two berths with a MLLW depth of 35 feet. A third berth is being developed to accommodate Matson's new Ro-Ro vessels. This berth and approximately ten acres of back-up area are scheduled to be ready for the inauguration of Ro-Ro service in 1975. The terminal has three container cranes, the largest having a 37-ton lifting capacity. Additional handling equipment includes straddle carriers and yard tractors. The container freight station has a total area of 29,200 square feet and 59 bays to accommodate truck vans and containers.

There is also a container maintenance building and a terminal administration building. At the gatehouse there are five truck lanes in and three out with a truck scale nearby.

Containers in the Matson terminal are usually stacked two high. The container yard has a capacity of 4,031 containers stacked and an additional 210 parked on chassis. There are also 189 reefer plugs available.

The average number of containers handled daily at Matson's terminal is 150 outbound and 80 inbound. Also 25 containers a day are loaded and discharged at the CFS. All containers move to and from the terminal by truck. There are two rail tracks that run onto the terminal, but they are not used for container shipments.

Matson Navigation Company is the major marine container carrier between the West Coast and Hawaii. From Matson's Oakland terminal, there are an average of six sailings a month direct to Hawaii or via Los Angeles to Hawaii. There are additional sailings from Oakland to Hawaii via the Pacific Northwest. Matson put two new Ro-Ro vessels into service in 1973 between Los Angeles and Hawaii. This service will be extended to Oakland when new facilities are completed at Berth "F" in early 1975.

Matson recently inaugurated its new service between Oakland and Guam. Matson acquired the leases on three vessels formerly operated by Seatrain Lines and used for Hawaii-Guam service. Sailings are scheduled every ten days.

Sea-Land Service, Inc.

The Sea-Land terminal in the Outer Harbor area of the Port of Oakland is located at Maritime and 14th Streets. Interstate Highways 50 and 80 are approximately one mile from the terminal and State Highway 17 is also nearby.

Sea-Land's 70 acre terminal consists of a marine facility having two berths with 1,355 feet of berthing space and a MLLW depth of 35 feet. Located a short distance from the main marine terminal is a truck and rail terminal at Seventh and Ferry Streets. At this 7½ acre site, Sea-Land operates a 50,000 square foot freight station and a rail dock in a separate building. An office is located at the rail and truck terminal to administer its operations. In addition, Sea-Land maintains a CFS at the marine terminal.

All containers at the Sea-Land terminal are mounted on chassis. The container storage yard of more than two million square feet has a capacity of 1,794 35 and 40-foot containers with 249 reefer outlets available. Yard tractors position the containers within the terminal. Four 27½-ton Paceco container cranes do the vessel loading and unloading. Additional facilities at the terminal include a vessel operations building near the wharf, an office building, maintenance shop, gatehouse, and four truck scales.

Sea-Land is the largest marine carrier in terms of container volume in the San Francisco Bay Area. An average of 354 containers a day are handled through the gate at the Oakland terminal. To keep track of this large volume of containers, Sea-Land has a computerized container identification system. The terminal is equipped with scanners at the gatehouse and an automatic scanning truck for "reading" the container labels and passing this information onto the computer system.

Less than five percent of the containers are delivered or received by rail. There are two tracks which run down the apron of the two berths and also a track into the separate truck and rail terminal. These tracks run into the Oakland rail terminal where they connect with the Santa Fe, Southern Pacific, and Western Pacific lines.

Sea-Land provides container service directly between Oakland and the Far East with six to seven scheduled sailings per month out of Oakland. There are six SL-7 container ships operating on the West Coast-Far East routes. Sea-Land also has regular intercoastal service between West Coast ports and Alaska, Panama, the Caribbean, and the East Coast.

Sea-Land has mini-bridge and landbridge services which are handled through its Oakland terminal. Westbound containers from Europe and the East and Gulf Coasts go by rail to Oakland and then are transferred to a scheduled SL-7 sailing to the Far East. The same service is provided for eastbound containers going from the Far East to the East and Gulf Coasts and Europe.

United States Lines, Inc.

United States Lines presently operates its container service from the Port of Oakland's Public Container Terminal at Seventh Street.

The new U. S. Lines' terminal, the newest container terminal in San Francisco Bay Area, is scheduled to be operating in July 1974. The 50 acre terminal is being constructed in the Port of Oakland's Middle Harbor area adjacent to the Seatrain terminal.

The new terminal will have two berths, 1,450 feet in total length with a MLLW depth of 35 feet. One berth, (A), will be assigned to U. S. Lines. The second berth will be operated by Marine Terminals Corporation as a public container facility. Two 40-ton capacity, low profile container cranes will operate along the berth. U. S. Lines will continue to operate on a predominantly all mounted basis at the new terminal. There will be 535 spaces for 40-foot containers and 29 spaces for 20-foot containers. Eighty outlets for reefer units will be available in the terminal yard.

U. S. Lines maintains its West Coast office at the new terminal in 11 temporary trailers. Scheduled for completion by March 1975 is a two-story gate structure/office building complex. Eight truck lanes will be included in this complex. A maintenance and repair building is also being constructed. U. S. Lines will continue to operate a CFS at the Port of Oakland's Consolidation Center at Seventh and Ferry Streets. Presently, U. S. Lines maintains 30,000 square feet of floor space at this facility.

The approximate number of containers presently handled daily at the Public Container Terminal is 100 inbound and outbound. All containers are delivered and received by truck.

U. S. Lines operates full containerships out of Oakland on regular weekly schedules to the Far East via Guam and Hawaii. There are outbound sailings every eight days from Oakland to the Far East. U. S. Lines also has service between Oakland, the East Coast, and Europe with four departures from Oakland per month. There is also minibridge service available to Houston, New Orleans and East Coast ports.

TRANSFER PROCEDURES

The transfer of marine containers at the Ports of San Francisco and Oakland is accomplished almost entirely by drayage. Any procedural differences result from containers being shipped under different railroad piggyback plans.

In Trans-Continental Freight Bureau (TCFB), territory import/export containers primarily move under piggyback Plans II and IV, and under the outer container rule. The party responsible for providing the drayage between the TOFC/COFC terminal and the marine terminal depends on the type of piggyback plan which was or will be used.

Following is a general description of the container transfer process.

At the TOFC/COFC Terminal

A TOFC/COFC train arrives at night at a rail terminal in the East Bay. The TOFC/COFC terminals of all three railroads operate 24 hours a day so container handling equipment, such as piggybackers, is ready to unload the container carrying flatcars as soon as the train arrives. Mounted containers shipped TOFC are unloaded, while COFC containers are unloaded onto waiting chassis. Then they are parked by railroad yard tractors in a designated area of the terminal. All containers from trains arriving at night are unloaded, parked, and ready for delivery to marine terminals by morning.

Plan II

Under piggyback Plan II, the railroads provide pick up and delivery or "door-to-door" service.

A Plan II export container arriving at the TOFC/COFC terminal is moved by a motor carrier subsidiary or agent of the railroad to the terminal gatehouse to be cleared for delivery. A railroad waybill, which was cut from the shipper's bill of lading at the point of origin, accompanies the container. The waybill and other documents are checked at the gatehouse before the container is released for delivery to the steamship company terminal specified on the waybill. Drayage to a marine terminal in Oakland or San Francisco is then carried out by the subsidiary motor carrier of the railroad.

Approximately nine out of ten imported containers move under Plan II. Import containers follow the same transfer process as export containers, only in reverse. The rail carrier provides pick up service at the marine terminal.

When an import container has been discharged from a ship to the marine terminal container yard, the steamship company's rail desk clerk notifies the railroad selected according to the shipper's instructions. Upon notification of arrival, the railroad's drayage agent dispatches a tractor to pick up the container. At the marine terminal gatehouse, the motor carrier's delivery orders are checked, an interchange and inspection report is made, customs clearance is obtained and the container is released to the motor carrier. It is then drayed to the railroad TOFC/COFC terminal.

Before the railroad accepts the container for shipment, the accompanying documents are checked and the container inspected for damage. It is parked in the rail yard with other containers to be loaded on trains departing that night. For scheduled train departures, containers must be tendered for loading by 5:00 p.m. or up to four hours before train departure.

Plan IV

Under piggyback Plan IV, the railroad furnishes only the power and rails to transport the shipment. The shipper must furnish the container and flatcar as well as perform all loading and unloading of the freight, loading and unloading of the container on the flatcar, and pick up and delivery service. However, with most container shipments in and out of the San Francisco Bay Area, flatcars are furnished by the railroad, and they also perform the loading and unloading of the containers on the rail cars. Additional charges are made for these services. Freight forwarders, shipper's agents, and shipper's associations are the principal users of this plan.

The difference in the transfer process between a Plan IV and a Plan II container shipment is simply that the shipper, and not the rail carrier, arranges and pays for the drayage between the rail and marine terminals.

When an export container arrives at the destination TOFC/COFC terminal and is unloaded, the railroad notifies the consignee (usually a foreign freight forwarder) that it is ready for pick up. The consignee makes arrangements with a local trucking company or the railroad's motor carrier subsidiary to pick up and delivery the container to a marine terminal in Oakland or San Francisco.

With an imported container, after it is unloaded from the ship and parked in the container yard, the steamship company notifies the customhouse broker of its availability for pick up. The customhouse broker arranges for the drayage to the TOFC/COFC terminal of the railroad specified by the shipper.

Outer Container Rule

Under this rule the railroads ship containers as a substitute for boxcar service. The service provided and charges for transportation are the same as

those provided for a regular rail car shipment. The rail carrier provides pick up and delivery of the container or door-to-door service when origin and destination are rail served.

The transfer between rail and marine terminals under this rule is identical to a piggyback Plan II transfer. A significant volume of westbound export containers move under this rule to Pacific Coast ports.

Mini-bridge and Landbridge Transfers

Although it is not a special piggyback plan in railroad tariffs, mini-bridge and landbridge service should be mentioned because it is an important part of rail-marine interface. This service is expanding and accounts for an increase in volume of marine containers being shipped by rail out of the San Francisco Bay Area.

This is a combination rail-marine service that applies on import and export containers moving by rail between two port areas. Under this service a container is shipped on a single through ocean bill of lading under a through rate provided in a steamship company tariff.

Mini-bridge and landbridge containers moving through the San Francisco Bay Area are transferred by drayage. The steamship company arranges the drayage and all charges are covered under the mini-bridge and landbridge through rates.

For example, an imported mini-bridge container is off loaded from a ship and placed in the marine terminal container yard. The steamship company calls a local trucking firm or the railroad's motor carrier subsidiary to arrange for pick up and drayage to the TOFC/COFC terminal. The container is then moved by rail for delivery at an East or Gulf Coast port.

AVERAGE TRANSIT TIME, DISTANCE AND COST TABLES

Drayage Between Rail TOFC/COFC Terminals 1/
and Marine Terminals in the San Francisco Bay Area

Transit Times (Minutes)

	<u>Port of</u> <u>San Francisco</u> <u>Pier 80</u>	<u>Port of Oakland</u> <u>7th Street</u>	<u>Middle Harbor</u>
Santa Fe	75	45	45
SP-Oakland	45	15	15
SP-San Francisco	15	-	-
WP	45	15	10

Distances (Miles)

	<u>Port of</u> <u>San Francisco</u> <u>Pier 80</u>	<u>Port of Oakland</u> <u>7th Street</u>	<u>Middle Harbor</u>
Santa Fe	18	12	12
SP-Oakland	8	2	1
SP-San Francisco	2	-	-
WP	8	2	1

Costs 2/

	<u>Port of</u> <u>San Francisco</u> <u>Pier 80</u>	<u>Port of Oakland</u> <u>7th Street</u>	<u>Middle Harbor</u>
Santa Fe	\$58.00 - 60.00	\$21.90 - 35.00	\$15.00 - 40.00
SP-Oakland	49.50	16.30 - 17.00	7.50 - 25.00
SP-San Francisco	31.80 - 47.70	-	-
WP	49.50	17.50 - 22.00	7.50 - 25.00

1/ Santa Fe and WP maintain yards in San Francisco within 2 miles of marine terminals for the receipt and delivery of Plan IV and mini-landbridge containers. They are not included because direct loading and discharging of rail cars is not accomplished at these yards. Containers are transferred by drayage to TOFC/COFC terminals at the rail heads.

2/ All rates and charges are strictly tentative and are subject to change.

TIME, DISTANCE AND COST ANALYSIS

The transit times and distances between rail and marine terminals in the San Francisco Bay Area are modest. Some of the marine terminals are located as near as across the street to railroad TOFC/COFC terminals. Transit times shown in the table are valid under normal traffic conditions. They are naturally affected by traffic congestion. However, all of the rail and marine terminals surveyed have good access to freeway interchanges and are subject to a minimum of delays due to congested urban streets.

Interchange between marine terminals in San Francisco and TOFC/COFC terminals in the East Bay is sometimes delayed due to heavy traffic on the San Francisco-Oakland Bay Bridge. However, besides Southern Pacific's TOFC/COFC terminal located in San Francisco, Santa Fe and Western Pacific also maintain rail yards near the San Francisco waterfront that are designated as ramp points. Although these two ramp points are not operating TOFC/COFC terminals, the railroads will receive and deliver San Francisco origin and destination containers at these two points. The railroads supply the drayage between the ramp points and their TOFC/COFC terminals in the East Bay. Thus, equal service is provided by the railroads to marine terminals located on both sides of the Bay in San Francisco and Oakland.

In addition, the Santa Fe has a rail yard in Oakland at 40th and San Pablo that is designated as a ramp point. Santa Fe will receive and deliver Oakland origin and destination containers at this ramp point. Containers are drayed by the railroad between the Oakland ramp point and the TOFC/COFC yard in Richmond.

Drayage rates vary widely and do not have a direct relationship to transit times and distances. The variations are primarily due to the steamship companies establishing individual contracts with motor carriers for container transfer. The contracts are usually on a per container basis. The motor carriers involved are all regulated carriers, but the rates charged for container transfer can vary since the drayage is conducted within an exempt zone.

Distance and time influence the setting of the drayage rate but additional factors include:

1. Volume and regularity of container movements.
2. Quality of service offered.
3. Market competition among the motor carriers.
4. Desire of the truckers for business.

OVERLAND COMMON POINT

There is a large volume of Overland Common Point (OCP) cargo moving through the Ports of San Francisco and Oakland. The transfer of OCP cargo in containers is accomplished by drayage.

OCP is the system by which steamship conferences, serving West Coast ports, are allowed to charge lower rates on import/export cargo moving to or from points east of the Rockies. The lower combination rail/ocean rates are the result of the absorption of the following charges by the rail and marine carriers.

1. Steamship companies absorb wharfage and handling charges on both import and export OCP shipments.
2. Carloading of import cargo is absorbed 50 percent by railroads and 50 percent by steamship companies.
3. Car unloading of export cargo is absorbed 60 percent by the railroads and 40 percent by steamship companies.

MINI-BRIDGE AND LANDBRIDGE

The recent increase in mini-bridge and landbridge traffic is an important aspect of rail-marine interface in the San Francisco Bay Area. For example, Santa Fe reported an increase of 240 percent in mini-bridge traffic in 1973.

From the Ports of San Francisco and Oakland mini-bridge shipments originating in the Far East are sent on to the East and Gulf Coasts. Landbridge movements between Europe and the Far East, which move through San Francisco and Oakland, must also be transferred between the rail and marine terminals.

Completing the transfer of containers in one day is important because the competitive success of mini-bridge and landbridge service over all water service depends on the speed and efficiency of rail-marine interface.

DIRECT RAIL TRANSFER

The Ports of San Francisco and Oakland have no major problems with the rail-marine interface of containers as performed by drayage.

There is practically no direct transfer of containers from rail cars at the marine terminals. Facilities for direct transfer do exist, however. The marine terminals have tracks running into their yards and in some cases onto the aprons. However, they are used primarily for freight car service and for a few container deliveries. The reasons transfer by drayage is preferred to direct rail transfer are:

1. Time - Because of the close proximity of the rail TOFC/COFC terminals to marine terminals and the easy highway access, drayage time is short. Direct rail transfer would involve time-consuming switching. For direct rail transfer to marine terminals in the Port of San Francisco, barging as well as switching would cause delays.
2. Cost - Although the drayage rates vary widely, the average overall costs would be greater for direct rail transfer. Switching charges, extra train crews, and more equipment would be a few of the cost-additive factors. No matter who is responsible for pick up and delivery under the various rail plans, the increased costs of direct rail transfer would ultimately be passed onto the shipper.
3. Existing Receiving and Delivery Procedures - Marine container terminals are already set up for truck receiving and delivery. A separate operation would be required for direct rail delivery and receiving. All major marine carriers in the Bay Area have based their gate receiving and delivery operations on an "all mounted" container basis. It is more economical and efficient to have this single type of gate operation than to have additional procedures for direct rail transfer.
4. Existing Terminal Operations - Direct rail transfer of containers would require additional, and often duplicative, terminal operations. Additional labor, flatcar loading and unloading equipment, and a separate area of the marine terminal would be necessary whether the existing terminal operations are stacked-straddle carrier or all mounted.
5. Flexibility - Transfer by drayage is more flexible and expedient for the railroads, steamship companies, and shippers. Direct rail transfer is restricted by the availability of tracks, COFC handling equipment, and switching procedures.

CONCLUSIONS

A multiplicity of factors have been examined to measure their effectiveness in container transfer. But an examination of rail-marine interface would be incomplete without evaluating the finished product - transportation service to the shipper.

In the Ports of San Francisco and Oakland, transfer by drayage provides efficient transportation service to shippers. This is true regardless of which rail piggyback plan is used, who provides the drayage, or which marine and rail terminals are involved. In all cases, the transfer is accomplished in one day with practically no delays nor missed connections between the railroads and steamship lines.

The only delays observed were at some of the marine terminals during peak receiving and delivery days when gate transactions exceeded the processing capacity. This is partially a documentation and terminal operations problem. It is being solved by more simplified documentation and faster processing methods. For example, the Sea-Land terminal, having the greatest container volume in the Bay Area, experiences a minimum of delay due to its computerized container identification and documentation systems.

One-day transfer service is being maintained despite rapid increases in volume. The railroads in the San Francisco Bay Area are experiencing increased domestic TOFC shipments as well as a greater number of marine container shipments.

All three railroads are expanding and improving their TOFC/COFC facilities to meet the increased volume. Future planning for new facilities at both rail and marine terminals indicates the continued use of drayage for container transfer. As long as the present level of service is maintained and shippers are satisfied, the present rail-marine interface system will continue.

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